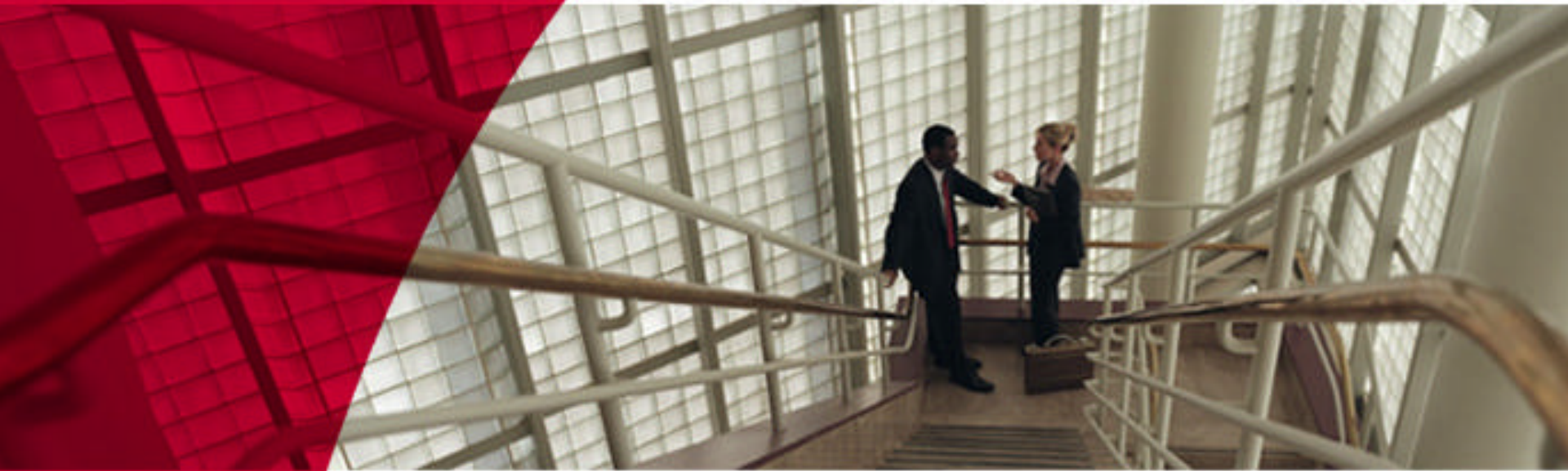


**DynCorp Systems and
Solutions LLC, a CSC
Company**

**CONTRASTING A HAZARD
RANKING SYSTEM EVALUATION
WITH A SUPERFUND RISK
ASSESSMENT**

Dr. William A. Chantry, Jr.





A HRS Evaluation is not a “Preliminary” Baseline Risk Assessment

- **Purposes are different**
- **Scope is different**
- **Approach taken during the evaluations is different**
- **Structure is different**
- **Regulatory status of the evaluations is different**
- **Level of information used are different**
- **Hazardous substances considered are different**
- **Pathways, Exposure Factors, Toxicity and Receptors considered partially overlap**
- **Final measures reflecting risk are different**
- **Public review criteria are different**



The Purposes of an HRS Evaluation and a Superfund Risk Assessment are Different

- **An HRS evaluation is used to determine if a site is eligible for the NPL**
 - **Listing a site only indicates further investigation is considered necessary.**
- **A Superfund Risk Assessment is used to determine the need for remedial action**
 - **Determines if further remedial action is necessary, possibly risk management, clean-up or a combination of both.**





The Scope of an HRS Evaluation and a Superfund Risk Assessment are Different

- An HRS evaluation is a qualitative estimate of the relative risk the site poses compared to that posed by other sites
 - Only one final HRS evaluation is performed per site
 - Focus is on current site conditions
- A Superfund Risk Assessment is a quantitative analysis based on site-specific risks posed by releases at the site
 - A Risk Assessment may cover only one or more operable units at a site or the entire site
 - Considers current conditions and future use scenarios



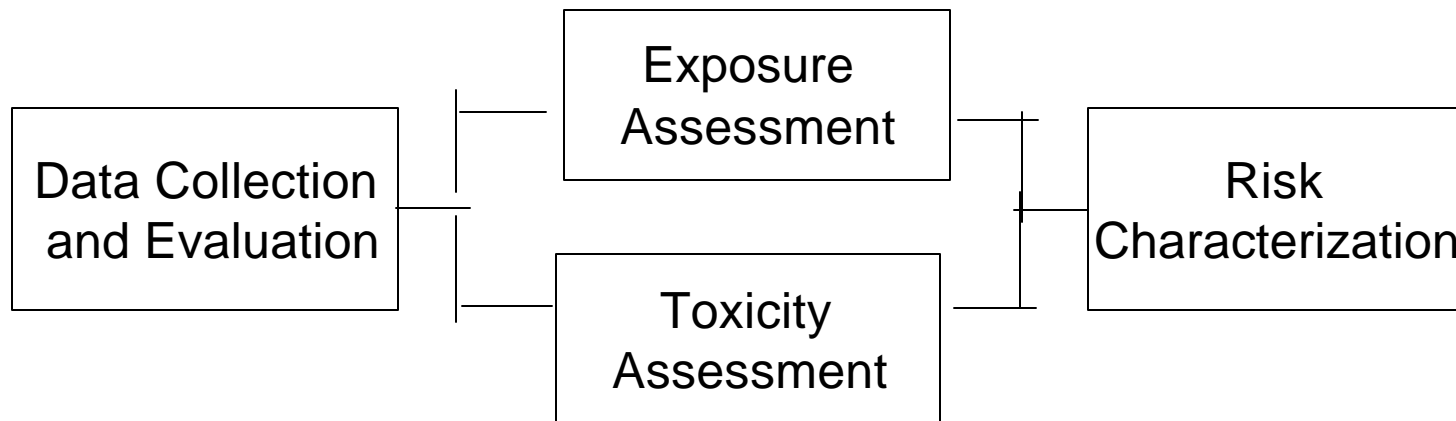
The Approaches used in Performing an HRS Evaluation and a Superfund Risk Assessment are Different

- **An HRS evaluation only uses sufficient information to determine if the site qualifies for listing**
 - **Information is gathered in a separate step, a Site Inspection**
 - **A site score of 28.50 is an on-off switch, and may be achieved by evaluating a single or multiple pathways of concern, and may not even consider all threats or eligible receptors within a pathway**
- **A Superfund Risk Assessment comprehensively identifies and evaluates all risks posed**
 - **Information gathering is part of the process**
 - **While there are thresholds of risk measures at which certain activities are undertaken, the risk evaluation does not stop once these thresholds are achieved until all risk is considered**



The Structures of an HRS Evaluation and a Superfund Risk Assessment are Different

- **Structure of an HRS evaluation:**
 - Four pathways : Likelihood of Release X Waste Characteristics X Targets – “sort of”
 - Factor values are qualitative, based on ranges, and many are capped
- **Structure of a Superfund Risk Assessment:**





The Regulatory Status of the Evaluations is Different

- **An HRS evaluation is performed following procedures defined in a regulation**
 - 40 CFR Part 300 Appendix A, part of the NCP
 - The evaluation must strictly follow the procedures set forth in the HRS, with only built in, limited adjustments to reflect site-specific conditions
- **A Superfund Risk Assessment evaluation is performed following procedures outlined in Superfund guidance**
 - RAGs
 - The evaluation process can be adapted to reflect site specific conditions as long as consistent with intent



The Level of Information used in an HRS evaluation and a Superfund Risk Assessment is Different

- **An HRS evaluation is based on screening level information**
 - Designed to be based on 6 to 20 samples and readily available demographic information
 - Biased sampling design
 - Analytical information is quantitative but not necessarily statistically representative of site-specific conditions
- **A Superfund Risk Assessment evaluation is based on site-specific information**
 - Data collection efforts are designed to determine chemical, physical and environmental site-specific conditions
 - Unbiased sampling designs
 - Analytical information is both quantitative in nature and statistically representative



The Hazardous Substances considered in an HRS evaluation and in a Superfund Risk Assessment are different

- **An HRS evaluation considers all hazardous substances actually or potentially released into the environment,**
 - Found in a waste “source” which is not contained
 - Found in the environment at a level three times the background level or, if no background level, if present above detection
 - Most of scoring based on most hazardous substance for the pathway or threat being evaluated, limited consideration of combined effects
- **A Superfund Risk Assessment focuses on Chemicals of Potential Concern**
 - Focuses on substances with concentrations at or above risk levels
 - Considers concentrations at point of exposure
 - Considers total risk from all hazardous substances



The Pathways, Exposure factors, Toxicity and Receptors considered in an HRS evaluation and in a Superfund Risk Assessment partially overlap

- **An HRS evaluation:**
 - Considers four exposure pathways or fewer to achieve cut-off score
 - Does not reflect differences in exposure scenarios between sites or receptors
 - Considers intrinsic (worst case) toxicity of substances
 - Considers concentration only in discrete ranges
 - Considers only intrinsic mobility of substances in air and ground water, persistence in surface water, bioaccumulation in limited non-human receptors
 - Considers only generic worst case exposure scenarios
 - Considers reasonable maximally exposed individuals, total population, limited environmental receptors, limited consideration of workers, no consideration of transients, limited consideration of type of resources, only human fisheries considered in food chain
- **A Superfund Risk Assessment:**
 - Considers as many exposure pathways as are present at a site
 - Considers concentrations at points of exposure
 - Assumes for each substance the higher the concentration, the higher the risk
 - Considers site-specific exposure scenarios
 - Concentrates on reasonable maximally exposed individual, but considers all possible receptors associated with a site
 - Considers total risk from all hazardous substances



The Final Measures reflecting Risk are different in an HRS evaluation and in a Superfund Risk Assessment

- The final measure of an HRS evaluation is a Score
 - The score is a value reflecting possible risk only relative to that of other sites evaluated
 - The site score and the pathway scores vary between 0 and 100 and are capped at 100
 - A higher score does not necessarily indicate higher risk, dependent on number of pathways evaluated and information available
- The final measure of a Superfund Risk Assessment reflects quantitative risk
 - May be several risk measures or ranges of risk reflecting different receptors and scenarios
 - The risk measure is site-specific
 - The measure is not capped
 - A higher value demonstrates a greater risk



The Public Review Criteria for an HRS Evaluation and a Superfund Risk Assessment are Different

- **The review criterion for an NPL listing based on an HRS evaluation is established by the Administrative Procedure Act, since it is a rulemaking**
 - **The criterion is whether the site score it was developed in an arbitrary and capricious manner constituting an abuse of discretion, rather than whether it can be proven absolutely correct**
 - **CERCLA established that all listing court challenges are in the Federal District DC Court of Appeals**
 - **EPA is given deference in interpretation of the meaning of an HRS evaluation**
- **The review criteria for a Superfund Risk Assessment are established by the NCP**
 - **The review criteria are based on accuracy and completeness**
 - **Initial challenges are subject to the same judicial challenge procedures as most other federal actions**



In Summary, An HRS evaluation is not a “Preliminary” Risk Assessment

- An HRS score is a limited, biased measure of relative risk among all sites evaluated, is qualitative, is often based on non-representative information, reflects only current conditions, reflects limited exposure scenarios and is not a measure of site specific risk.**
- A Superfund Risk Assessment is a thorough, unbiased measure of risks specific to a site, is quantitative, is based on statistically representative information, includes all relevant exposure scenarios, and is a measure of site-specific risk.**
- An HRS Evaluation is not a simplified Risk Assessment**

